PLAN FOR THE UNIFORM MAPPING OF EARTH RESOURCES AND ENVIRONMENTAL COMPLEXES FROM SKYLAB IMAGERY

EREP INVESTIGATION #510

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Monthly Plans and Progress Report

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OVERALL STATUS

Natural Vegetation Analog Study

Skylab II S190A color and color infrared imagery of the Colorado Plateau has been enlarged to a scale of ca. 1:500,000. These enlargements and the transparencies supplied to us have been utilized to map a selected area of southwestern Colorado and to analyze intraregional vegetation-environmental analogs. A broad physiognomic classification was used (secondary and tertiary levels of the legend system) to establish mapping units.

Figure 1 illustrates a small portion of the Skylab II S190A color infrared print that was mapped. Significant detail exists beyond the broad physiognomic legend units utilized here and more detailed mapping will be conducted on enlargements at a scale of 1:250,000.

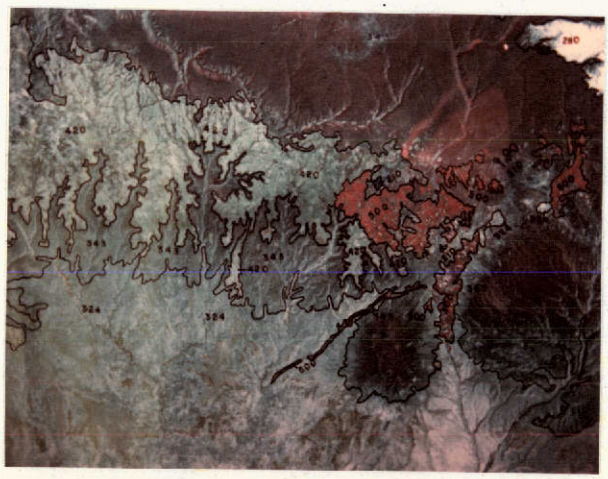

Figure 1. Vegetation Map from Skylab II S190A color infrared print of the Colorado Plateau Test Site (108226), 5 June 1973.

Legend units on Figure 1 refer to the following vegetation-environmental complexes:

210 indicates ponds, reservoirs, and lakes;

280 indicates snow covered land;

324 indicates salt desert vegetation dominated by various species of Atriplex, Sarcobatus, and other semidesert species;

343 is a complex of coniferous and broadleaf forests and woodlands;

420 is reseeded pastureland produced from cabling and otherwise eliminating the overstory woody vegetation; and

500 indicates agricultural lands.

In both the color and color infrared prints similar problems in phenological development were encountered as were reported for the S190B imagery last month. Ponderosa pine forests, oakbrush shrublands, and aspen forests are imaged very similarly on the color film due to the early (June 5, 1973) developmental stage in which these vegetation types were photographed. The color infrared film allows discrimination of aspen, spruce-aspen, and pure oakbrush vegetation types from salt desert, shrub steppe, pinyon-juniper, and ponderosa pine vegetation types. By early June the aspen and oakbrush have begun active photosynthesis and are structurally quite different from the other vegetation types mentioned. Therefore, the color infrared film will be utilized in greatest detail to evaluate the usefulness of Skylab imagery for discrimination of vegetation-environmental complexes. It is anticipated that the August 1973 Skylab III imagery will be useful in discriminating most vegetation types due to the advanced state of development of most vegetation types at that time of the year.

Most of the anticipated B-57 underflight coverage of our test sites has been received. These data, along with ground truth data, were utilized to identify over 200 specific analog test sites on color infrared S190A prints.

The following vegetation analogs were identified and plotted on the Skylab II S190A color infrared prints:

	Vegetation Analog	Legend Symbol
(1)	Greasewood (Sarcobatus) Communities	324.6
(2)	Saltbush (Atriplex) Communities	324.7
(3)	Semidesert Annual (Atriplex, Bromus) Communities	312.3
(4)	Shrub Steppe (Artemisia) Communities	325.5
(5)	Pinyon-juniper (Pinus edulis-Juniperus) Woodland Communities with 10-40% cover	341.3
(6)	Pinyon-juniper Woodland Communities with 40-70% cover	341.3
(7)	Cultural Shrub Steppe Vegetation	425.5
(8)	Riparian Cottonwood-Willow (Populus-Salix) Communities	342.6
(9)	Oak Woodland (Quercus) Communities	342.7
(10)	Pine Forest (Pinus) Communities	341.6
(11)	Aspen Forest (Populus tremuloides) Communities	342.8
(12)	Aspen/Spruce-fir Forest (Populus tremuloides/Picea-Abies) Communities	343.7
(13)	Sedge Meadow (Carex) Communities	315.4

Interpretation testing of intraregional analogs will be conducted using the sites documented with the underflight photography.

Rice Analog Studies

Due to the absence of either Skylab or aircraft support coverage of our specific test areas in the Louisiana Coastal Plains, emphasis is being switched to the Northern Great Valley Test Site in California. The lack of Louisiana test site coverage is unfortunate because this area has historically been an excellent area for the occurrence of yield limitations due to diseases and physical factors. However, work will proceed, using Earth-Sat-gathered ground and aerial photography to deal with yield reduction problems.

Work in the Northern Great Valley test area is proceeding utilizing the already received Skylab II, aircraft support and EarthSat-obtained photography. Although the season is over, few farmers have returned data to us, so efforts are proceeding in the area of constructing and refining the test procedures. The primary study area has been delineated and the subsampling units within identified. These subsampling units are being mapped, with each field being numbered and identified in terms of crop type. This procedure uses basically the aircraft support and EarthSat-acquired aerial photography. When completed, these mapped subsampling units will provide the basis for rice identification and mapping on the Skylab imagery.

Upon receipt of more cooperators field data sheets, work will proceed on yield determination. In preparation for this phase of the project maximum yield data for each commercial variety has been obtained from test plots operated by the University of California at Davis.

Until the receipt of pending Skylab III data, no multidate analysis is possible using the satellite photography. However, Table I indicates

excellent multidate coverage of the aircraft support and large scale photography. Once Skylab III data does arrive at the EarthSat office, it can be immediately incorporated into the array of information and multi-date analysis can be completed.

Table I

Imagery Type	Date													
	3/12	4/7	5/7	6/3	6/6	6/14	7/10	8/3	8/11	8/28	9/13	9/14	10/10	11/10
Aircraft support RB-57 + U-2	X	X		X				X	X		X		X	
Large scale, 9x9 & 70mm			X			X	X			X		X		X
Skylab					X									

TRAVEL PLANS

No travel is planned to either natural vegetation study area.

PERSONNEL

No changes in personnel have occurred since the last reporting period.

PROBLEMS

No significant problems have occurred at this point in the project.

PLANS FOR NEXT REPORTING PERIOD

The color characteristics and limits of vegetation identification will be tested on Skylab II color infrared imagery of the Colorado Plateau. A statistical analysis of mapping accuracy from Skylab II S190A imagery will be conducted using B-57 (RC-8 and Zeiss) imagery. A study of the critical color values at which vegetation dominates the image characteristics of both S190A and S190B photographs will be conducted. Interpretation tests will begin on S190A and S190B imagery. Highly enlarged sections of S190A and S190B frames of Colorado will be mapped in detail and compared with existing resource maps.